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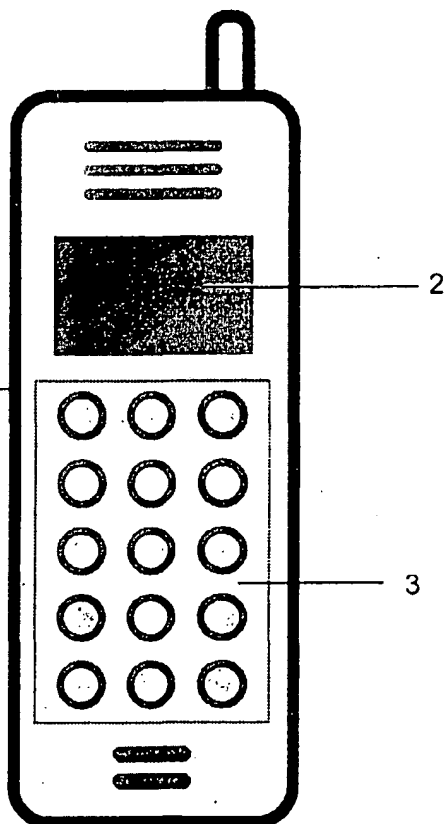
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(54) Title: **TELEPHONE CALL FILTERING**



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(57) Abstract: A method for filtering incoming calls to a phone user's mobile or other telephone whereby the phone user designates a plurality of preferred incoming callers' numbers. When an incoming call is received, the incoming caller's number is identified. The incoming caller's number is compared with the designated preferred incoming callers' numbers. If the incoming caller's number matches one of the designated numbers, the phone user's mobile or other phone rings and the phone user can answer the incoming call. If the incoming caller's number does not match one of the designated numbers, the phone user's mobile or other phone does not ring.



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TELEPHONE CALL FILTERING

Field of the invention

- 5 The invention relates to a method of filtering incoming calls to a phone user's telephone. It relates particularly but not exclusively to a method whereby an incoming call number is identified and compared with a selection of preferred numbers, so that the telephone is caused to ring only if the incoming call is from one of the preferred numbers.

10

Background to the invention

- Some current telephone systems provide a Caller Identification facility which presents the number of the incoming call on a numerical display for the user to see. This enables the user of the phone to identify the caller before they answer
- 15 the phone. If it is undesirable to speak with a particular caller, the user may choose to let the phone "ring out" or divert to an alternative number or answering service. This is one method of call screening; however the telephone user will always have either to answer or to ignore the call, and then endure the inconvenience of the phone ringing or vibrating each time there is an incoming
- 20 call. There is also a possibility that the caller knows that their call is not being answered because their number has been displayed on the telephone screen; it may be more prudent for the user to switch the phone off or divert all calls to an answering service or alternative number. However, diverting all calls to an answering service or alternative number may defeat the purpose of using the
- 25 phone in the first place, since emergency calls will also be diverted. The caller may also have their number blocked from appearing on the screen of the phone that they are calling, in which case the current caller identification facility is of no use as a call screening device.

- 30 Although not widely known or used, it is possible in some telephone systems for the telephone exchange to provide call-barring services, whereby a telephone user may stipulate numbers from which they do not wish to receive an incoming call. When a call is made from a barred number to a phone, the phone will not ring and the barred caller will either hear a busy tone or be diverted to a pre-
- 35 recorded message or answering service. This type of call-barring service

effectively stops known undesirable callers from connecting a call with a telephone but that telephone is still accessible to anyone else who wishes to call it.

- 5 This type of call barring facility has several limitations when applied to mobile phones. In the business environment an individual may be in a meeting where he would like to switch his mobile telephone off or divert incoming calls because it would be inappropriate for the telephone continually to ring whilst the meeting is being conducted. However, he is expecting one particular call that he must
- 10 answer, even if it occurs during the meeting. Present call-barring services do not accommodate this requirement. Similarly, a physician may be doing home visits and does not want to answer personal calls while he is working but wishes to receive calls from his surgery. Simply diverting all calls or switching his mobile telephone off is not appropriate in this situation, but neither is receiving
- 15 social calls. There are also situations where people may wish to receive interstate or international calls but not local calls, but currently they are limited to receive all calls or none at all.

Summary of the Invention

- 20 According to a first aspect of the present invention, there is provided a method of filtering incoming calls to a phone user's mobile telephone including the following steps:
- (a) the phone user designates a plurality of preferred incoming callers' numbers;
 - 25 (b) when an incoming call is received, the incoming caller's number is identified;
 - (c) the incoming caller's number is compared with the designated preferred incoming callers' numbers;
 - (d) if the incoming caller's number matches one of the designated numbers,
 - 30 the phone user's mobile phone rings and the phone user can answer the incoming call;
 - (e) if the incoming caller's number does not match one of the designated numbers, the phone user's mobile phone does not ring.

If the user of the mobile telephone wishes to receive all calls from all incoming numbers, it is not necessary for the call filtering facility to be active. There are several ways in which the mobile phone user may elect to activate or deactivate the call filtering facility which include but are not limited to:

- 5 (a) entering a code into the mobile phone; or
 - (b) pressing a switch on the mobile phone; or
 - (c) selecting a call filtering option from a plurality of options in a menu on the phone user's mobile phone.
- 10 The numbers of preferred incoming callers may be designated in any suitable manner. They may be designated by registering them with a telephone company or local telephone exchange. However, it is preferred that they be designated on the phone user's mobile phone, so that the filtering process can occur entirely on the phone user's mobile phone, rather than at a telephone
- 15 exchange.

To enter the numbers of preferred callers into the mobile telephone, the phone user preferably selects a programming mode and enters the preferred callers' numbers using the keypad. The preferred numbers may be entered in their

20 entirety, or they may be selected from a list of numbers which are already programmed into the mobile phone. As a further option, whenever the phone user receives a call or makes a call, the phone user may have an option to designate the number called from or to as a preferred number. At any time, the user may edit, delete or add to the selection of preferred numbers that has been

25 programmed into the mobile phone.

When the call filtering facility is activated and an incoming call is registered by the mobile telephone, the incoming caller's number is compared with the list of preferred callers' numbers. If the incoming call is being made from a preferred

30 number, the mobile telephone will ring and if the incoming number is not a preferred number, the mobile telephone will not ring. There are various possible variations of this arrangement. For example, the mobile phone may ring when a call is received and the phone is not in call-filtering mode. When in call-filtering mode, the phone may vibrate when a call is received from a preferred number,

and it may do nothing when a call is received from a non-preferred number. As another example, when the phone is in call-filtering mode the phone user's phone may light up but not ring when a call is received from a non-preferred number, and the phone user may have (say) five seconds to answer the call, 5 whereafter the call is diverted to an answering service. Similarly, when in call-filtering mode the phone may ring when a call is received from a preferred number and vibrate when a call is received from a non-preferred number. Any different filtering modes and mobile phone functions may be combined to enhance the operation of the call filtering facility.

10

For those incoming calls which are not made from a preferred number, the user may be given an option stipulate that the call be dealt with in any suitable manner. Suitable ways of dealing with a non-preferred call include that the call:

- (a) be forwarded to another number; or
- 15 (b) be forwarded to a voice mail system; or
- (c) be forwarded to an answering machine; or
- (d) be connected to a recorded message; or
- (e) receives an engaged signal; or
- (f) be disconnected.

20

The user may also wish to program groups of preferred numbers into the mobile telephone. This would enable them receive calls made by different groups of callers such as work callers, social callers, interstate or overseas callers or any combination thereof. By programming the call filter to operate using groups of 25 callers, the mobile phone user can optimise the usage of their mobile phone for incoming calls.

It is also possible to incorporate an override facility into the invention, whereby certain preferred numbers can override calls made from numbers that are not 30 preferred. The call filter method may also be used in reverse, whereby numbers from which the user does not wish to receive calls can be nominated. This may include numbers for individuals known for making harassing, prank or repetitive calls.

According to a second aspect of the present invention, there is provided a method of filtering incoming calls to a phone user's telephone including the following steps:

- 5 (a) the phone user designates a plurality of preferred incoming callers' numbers;
- (b) when an incoming call is received, the incoming caller's number is identified;
- (c) the incoming caller's number is compared with the designated preferred
10 incoming callers' numbers;
- (d) if the incoming caller's number matches one of the designated numbers, the phone user's phone rings and the phone user can answer the incoming call;
- (e) if the incoming caller's number does not match one of the designated numbers, the phone user's phone does not ring.

15

The telephone user may elect to activate or deactivate the call filtering facility in several ways which include but are not limited to:

- (a) entering a code into the phone; or
- (b) pressing a switch on the phone; or
- 20 (c) selecting a call filtering option from a plurality of options which are provided through the phone user's phone.

If the telephone user wishes to receive all calls from all incoming numbers, the telephone user may de-activate the call filtering facility.

- 25 The numbers of preferred incoming callers may be designated in any suitable manner such as registering them with the telephone company or local telephone exchange. However, it is preferred that the numbers are designated using the phone user's telephone, so that the filtering process can be set up and occur entirely on the phone user's telephone, rather than necessitating
30 involvement of a telephone exchange or service provider.

To enter the numbers of preferred callers into the telephone, the phone user preferably selects a programming mode and programs the preferred callers' numbers using the keypad, where the phone numbers are entered, or are

selected from a plurality of pre-stored numbers. As an additional feature, the phone user may be given the option to designate additional numbers to be added to the list of preferred numbers whenever the phone user receives or makes a call. The selection of preferred numbers may be edited, added to or
5 have numbers deleted.

As previously described, when the call filtering facility is activated, the incoming caller's number is compared with the list of preferred callers' numbers, so that if the incoming call is being made from a preferred number, the telephone will ring
10 and if the call originates from a number which is not preferred, the telephone will not ring. Other variations of the arrangement include but are not limited to:

- (a) the telephone will ring when a call is received and the telephone is not in call-filtering mode; or
- (b) when in call-filtering mode, a light on the phone user's telephone may
15 flash when a call is received from a preferred number, and do nothing if the call is from a non-preferred number; or
- (c) when in call-filtering mode, a light on the phone user's telephone may illuminate or flash without the telephone ringing when a call originates from a non-preferred number and the phone user may have a limited time in which to
20 answer the call whereafter the call is diverted to another number or say, an answering service; or
- (d) when in call-filtering mode, the phone user's telephone may ring when the call originates from a preferred number and a light on the telephone may illuminate or flash when a call originates from a non-preferred number; or
- 25 (e) when in call-filtering mode, the phone user's telephone may ring with a particular distinctive ringing tone when the call originates from a preferred number and the telephone may ring with a different distinctive ringing tone when a call originates from a non-preferred number.

Any different filtering modes and telephone functions may be combined to
30 enhance the operation of the call filtering facility.

The telephone user may be given several options from which to choose the way calls which originate from non-preferred numbers are dealt with. These options include that the call:

- (a) be forwarded to another number; or
- (b) be forwarded to a voice mail system; or
- (c) be forwarded to an answering machine; or
- (d) be connected to a recorded message; or
- 5 (e) receives an engaged signal; or
- (f) be disconnected.

Groups of preferred numbers may also be programmed into the telephone to enable them to receive calls which are made by different groups of callers such as work callers, social callers, interstate callers or overseas callers or any
10 combination thereof. This enables the phone user to optimise their use of their telephone and their time for receiving incoming calls.

An override feature may also be incorporated into the invention, whereby
15 certain preferred numbers can override calls made from numbers which are not preferred. The call-filter method may also be used in reverse, whereby numbers from which the user does not wish to receive calls can be programmed. This may include numbers for individuals who are known for making undesirable calls.

20 In a preferred form, the current invention enables users of mobile and other telephones to receive calls made from preferred numbers and filter out all other calls. This means that the mobile or other telephone user is not harassed or interrupted by nuisance calls and their phone will not ring (or ring with a
25 particular characteristic ring) unless the caller's number has been pre-designated as preferred.

Brief Description of the Drawings

30 The invention will now be described in greater detail by reference to the drawings. It is to be understood that the particularity of the drawings does not supersede the generality of the preceding description of the invention.

Figure 1a is an illustration of a mobile telephone for use in accordance with an embodiment of the invention.

Figure 1b is an illustration of a non-mobile telephone for use in accordance with an embodiment of the invention.

5 Figure 2 is a flowchart illustrating an embodiment of the invention.

Figure 3 is a flowchart illustrating a selection of call forwarding options;

Figure 4 is a flowchart illustrating an incoming call processing procedure.

Detailed Description

10 The mobile telephone illustrated in Figure 1a includes a handset 1 which rings or vibrates when an incoming call is received, a display 2 which displays the number of the incoming call for the user to see prior to answering the call and a keypad 3. A non-mobile telephone is illustrated in Figure 1b, including a base
15 the number of the incoming call, a keypad 13 and a light 14 which may illuminate when there is an incoming call.

In the inventive method, incoming calls to the phone user's mobile phone 1a or other phone 1b are filtered. Firstly, the phone user designates a plurality of
20 preferred incoming callers' numbers. Next, when an incoming call is received, the incoming caller's number is identified. The incoming caller's number is compared with the designated preferred incoming callers' numbers. If the incoming caller's number matches one of the designated numbers, the phone user's mobile phone 1a or other phone 1b rings and the phone user can answer
25 the incoming call. If the incoming caller's number does not match one of the designated numbers, the phone user's mobile phone 1a or other phone 1b does not ring.

In a preferred embodiment as illustrated in Figure 2, when the mobile phone 1a or other phone 1b is switched on, the user accesses the call filtering service by
30 scrolling, using the keys on keypad 3 or 13, through a plurality of options available to the mobile or other phone user until the call filter option 4 is presented. On selecting this option, the user is presented with a list of options

that include entering a programming mode 5, call forwarding options 6 and activating or deactivating the call filter 7.

5 In an alternative embodiment, the call filter may be activated by way of a physical switch provided especially for the purpose on the phone user's mobile or other phone. In this case, it is particularly easy for the phone user to switch between filtering and non-filtering modes; however, it is necessary for the mobile or other phone to have a hardware design which incorporates a switch, whereas for software-only or embodiments of the invention which are provided
10 through the telephone service provider or local exchange, many existing mobile or other phones may be upgraded by means of a software upgrade to incorporate the method of the present invention.

Other suitable means of activating the call filtering feature include entering a
15 code into the mobile or other phone (which may potentially be quicker than finding the filtering feature in a menu), or voice activation.

When the programming mode 5 is selected as illustrated in Figure 2, the user is presented with several options which include enter a new preferred number,
20 edit an existing preferred number, delete an existing preferred number, delete all preferred numbers, add a new group of preferred numbers and delete a group of preferred numbers. If the phone user selects the first option, they will enter the new preferred number which will then be stored with any previously entered numbers in the mobile or other phone's memory. If the second option is
25 selected, the number may be edited in a manner similar to the way in which a speed dial number is entered into the mobile or other phone. Similarly, if the third, fourth or fifth options are selected, a preferred number may be deleted from the selection, or a new group of preferred numbers can be added or deleted.

30

When the call forwarding option 6 is selected from the call filter options, the user is presented with a call forwarding menu 9 which may include such options as: forwarding the call to another number, forwarding the call to a voicemail system, forwarding the call to an answering service, connecting the call to a pre-

recorded message, presenting an engaged signal, and disconnecting the call. The user selects one of these options for the management of unwanted incoming calls.

- 5 It is to be understood that various additions alterations and/or modifications may be made to the parts previously described without departing from the ambit of the invention.

Claims

1. A method of filtering incoming calls to a phone user's mobile telephone including the following steps:
 - (a) the phone user designates a plurality of preferred incoming callers' numbers;
 - (b) when an incoming call is received, the incoming caller's number is identified;
 - (c) the incoming caller's number is compared with the designated preferred incoming callers' numbers;
 - 10 (d) if the incoming caller's number matches one of the designated numbers, the phone user's mobile phone rings and the phone user can answer the incoming call;
 - (e) if the incoming caller's number does not match one of the designated numbers, the phone user's mobile phone does not ring.
- 15 2. A method according to claim 1 wherein the filtering method may be activated or deactivated by the phone user:
 - (a) entering a code into the mobile phone; or
 - (b) pressing a switch on the mobile phone; or
 - 20 (c) selecting a call filtering option from a plurality of options in a menu on the phone user's mobile phone.
3. A method according to claim 1 or claim 2 wherein an incoming call that is not made from a designated number:
 - 25 (a) is forwarded to another number; or
 - (b) is forwarded to a voice mail system; or
 - (c) is forwarded to an answering machine; or
 - (d) is connected to a recorded message; or
 - (e) receives an engaged signal; or
 - 30 (f) is disconnected.
4. A method of filtering incoming calls to a phone user's telephone including the following steps:

- (a) the phone user designates a plurality of preferred incoming callers' numbers;
- (b) when an incoming call is received, the incoming caller's number is identified;
- 5 (c) the incoming caller's number is compared with the designated preferred incoming callers' numbers;
- (d) if the incoming caller's number matches one of the designated numbers, the phone user's phone rings and the phone user can answer the incoming call;
- (e) if the incoming caller's number does not match one of the designated
- 10 numbers, the phone user's phone does not ring.

5. A method according to claim 4 wherein the filtering method may be activated or deactivated by the phone user:
- (a) entering a code into the phone; or
 - 15 (b) pressing a switch on the phone; or
 - (c) selecting a call filtering option from a plurality of options which are provided through the phone user's phone.

6. A method according to claim 4 or claim 5 wherein an incoming call that is
- 20 not made from a designated number:
- (a) is forwarded to another number; or
 - (b) is forwarded to a voice mail system; or
 - (c) is forwarded to an answering machine; or
 - (d) is connected to a recorded message; or
 - 25 (e) receives an engaged signal; or
 - (f) is disconnected.

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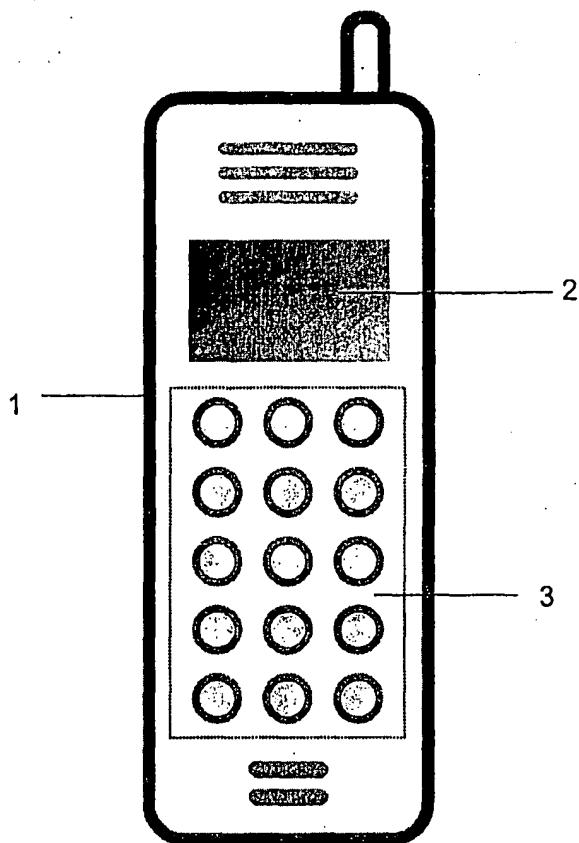


Figure 1a

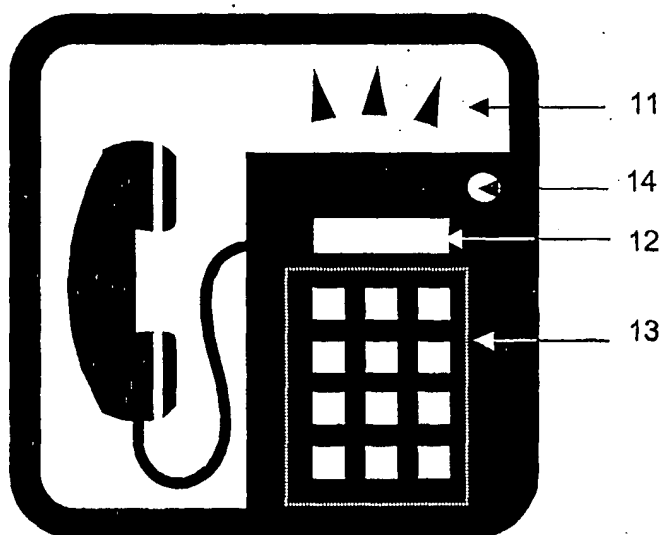


Figure 1b

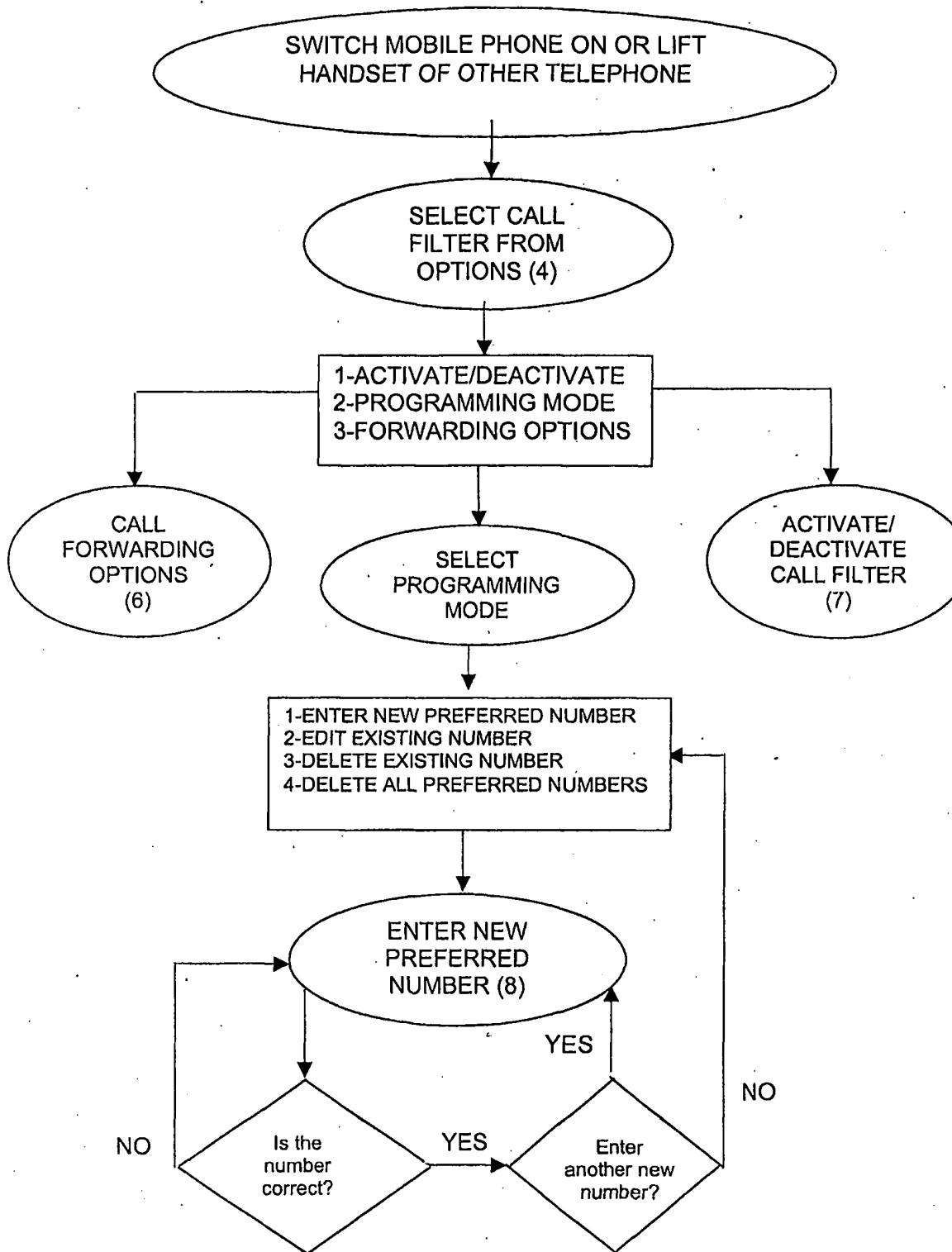


Figure 2

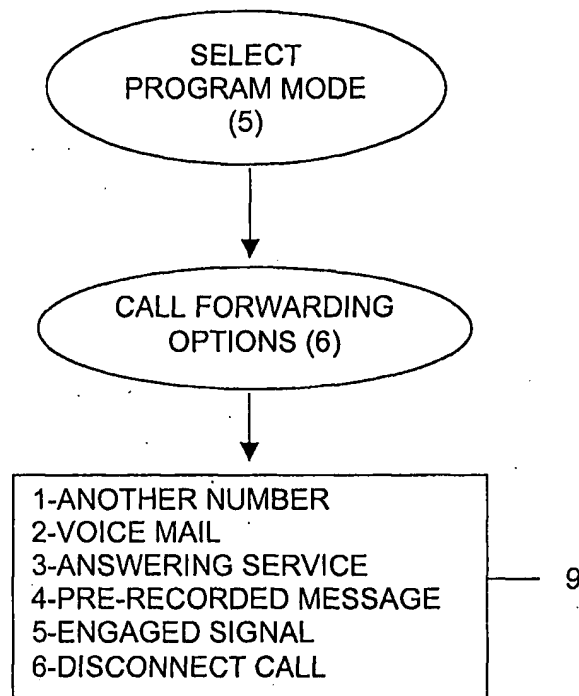


Figure 3

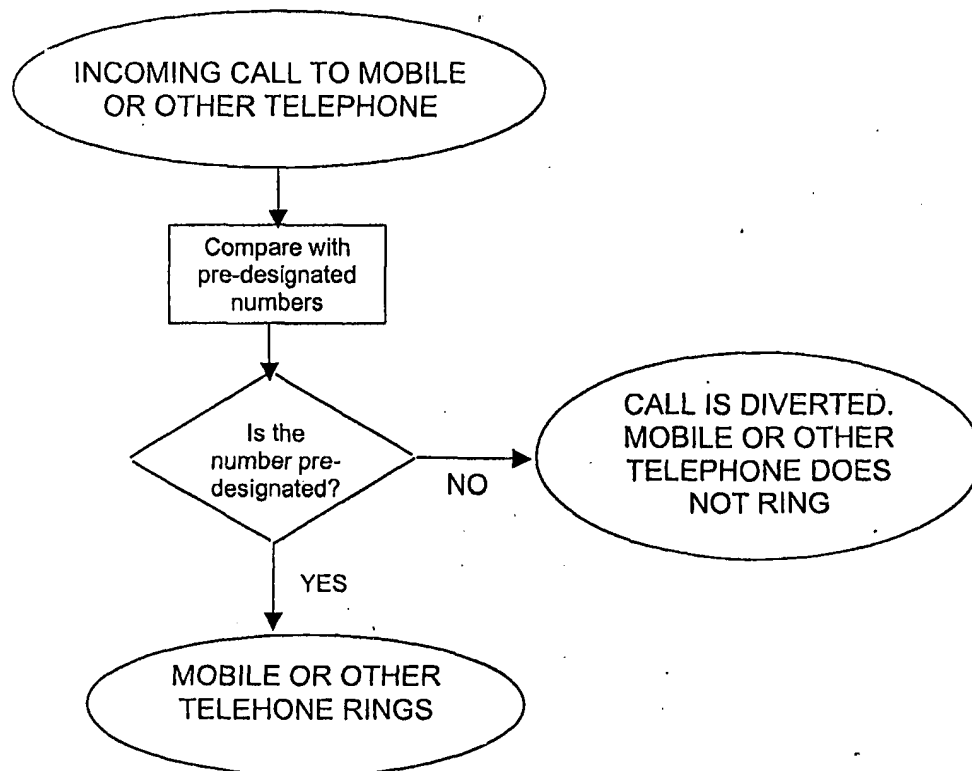


Figure 4.

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl. ⁷ : H04M 3/436; H04Q 7/32		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
WPAT: telephone, phone, mobile, call filter, call screen, store, memory		
USPTO: telephone, phone, call filtering, call screening		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5452346 A (MIYAMOTO) 19 September 1995 Col. 2 line 47-Col. 13 line 46	1-6
X	US 5490205 A (KONDO et al.) 6 February 1996 Col. 1 line 60-Col. 9 line 5	1-6
X	CA 2244682 A1 (AT&T WIRELESS SERVICES, INC., US) 11 February 1999 Page 4 line 15-Page 17 line 11	1-6
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
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"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 21 November 2001	Date of mailing of the international search report 24 NOV 2001	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized officer JUZER KHANBHAI Telephone No : (02) 6283 2176	

INTERNATIONAL SEARCH REPORT

International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5995603 A (ANDERSON) 30 November 1999 Col. 1 line 64-Col. 7 line 2	1-6
A	EP 0895432 A1 (TECNOMEN OY) 3 February 1999 Col. 1 line 5-Col. 3 line 56	1-6

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU01/01276

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
US	5452346	CA	2122517	EP	624966	JP	6326760
US	5490205	JP	4357743	JP	4357747	JP	4357744
CA	2244682	N/A					
US	5995603	NONE					
EP	895432	AU	85437/98	BR	9813006	NO	20000497
		WO	9907166				
END OF ANNEX							